

## A new species of the genus *Microlestodes* Baehr from Arnhem Land, Northern Territory, Australia (Insecta: Coleoptera: Carabidae: Lebiini)

MARTIN BAEHR

Zoologische Staatssammlung München, Münchhausenstr. 21, D-81247 München, GERMANY  
martin.baehr@zsm.mwn.de

### ABSTRACT

A new species of the beetle genus *Microlestodes* Baehr is described from Arnhem Land in the Northern Territory, Australia: *M. arnhemensis* sp. nov. This new species is closely related to the widespread *M. macleayi* (Csiki), and to *M. rufoniger* Baehr and *M. inoculatus* Baehr, both latter species from northern tropical Australia, but can be distinguished by the different colour pattern, wider pronotum with wider base, and the differently shaped aedeagus. It is included in the key to the species of the genus *Microlestodes* (vide Baehr 1987: 29). For comparison of body shape, photographs of the three related species are included.

KEYWORDS: Coleoptera, Carabidae, Lebiini, *Microlestodes arnhemensis*, taxonomy, Arnhem Land, Northern Territory.

### INTRODUCTION

With about 40,000 described species and subspecies worldwide, the Carabidae is one of the largest families of beetles. The family belongs to the suborder Adephaga which also includes a few families of aquatic and semiaquatic beetles and which is mainly characterised by the rather plesiomorphic structure of their leg insertions and by their primitive campodeiform larvae which still possess well articulated legs. In Australia, about 2750 species and subspecies of Carabidae are presently recorded (Baehr unpubl. checklist), but the number of actual existing species certainly is much greater.

Lebiini (or Lebiinae, according to the opinion of different authors) is a highly evolved tribe (or subfamily) of carabid beetles, mainly characterised by their abbreviated elytra, and in many species, denticulate tarsal claws. Lebiini is a very large tribe of remarkably differently shaped and coloured species which possess very different habits. The tribe is divided into several subtribes, the status and limits of some of which are still subject of discussion. The tribe is distributed worldwide, but certainly is much more common and diverse in the tropics than in temperate regions. This may be partly due to the large number of tree-dwelling species that occur in tropical and subtropical forests. In Australia, the number of lebiine species that occur in and under the bark of a great variety of tree species is particularly numerous.

From Australia, so far 33 genera of Lebiini are recorded but additional ones are already known to exist or are being described (Baehr unpubl.). The number of presently recorded species and subspecies is 338, but this number does not equal the number of actually existing species by a

long way. In particular, modern revisions of several of the large genera of arboricolous lebiine species would raise this number considerably.

The single specimen of the new species was detected in a small batch of carabid specimens collected near the northern coast of Arnhem Land. This description is regarded as a further supplement to my revision of the genus *Microlestodes* (Baehr 1987).

Although description of species based on a single specimen has to be done with some caution because of the risk of describing an aberrant specimen as new, I believe that the differences in body shape, colour pattern, and shape and structure of the male aedeagus, between the mentioned specimen and the three most similar species are substantial. Moreover, the specimen was compared with ample material of all three species, including paratypes.

### METHODS

Description and measurements follow the style used in my revision of the genus *Microlestodes* (Baehr 1987) and the supplementary descriptions (Baehr 1990, 2009). Body length has been measured from the apex of the labrum to the apex of the elytra; the length of pronotum was measured along the midline.

For dissection of the male genitalia the holotype was relaxed overnight in a jar with a moist atmosphere, then the genitalia were removed and subsequently cleaned for a short while in hot KOH. The photographs of the whole animal were obtained with a digital camera using ProgRes Capture Basic and AutoMontage, and subsequently processed using Corel Photo Paint 11.

The holotype of the new species is deposited in the Museum and Art Gallery of the Northern Territory (formerly Northern Territory Museum), Darwin (NTM).

## TAXONOMY

### Genus *Microlestodes* Baehr

*Microlestodes* Baehr, 1987. Gender masculine. Type species, by original designation, *Microlestes macleayi* Csiki, 1932 (= *Dromius humeralis* Macleay, 1871). Recent, Australia.

This genus of rather small lebiine beetles was erected by Baehr (1987) for four Australian and one New Guinean species that were formerly included in the almost worldwide genus *Microlestes* Schmidt-Göbel, 1846. *Microlestodes* differs from *Microlestes* mainly by the presence of three impilose basal antennomeres instead of two, and by the structure of the paraglossae which are free and do not encircle the glossa, as in *Microlestes*. Both these character states are regarded plesiomorphic in *Microlestodes* as compared with those of *Microlestes*.

Baehr (1987, 1990, 2009) described several additional species from Australia, and also the subgenus *Cyclolestodes* for *M. ovatus* Baehr, 1987. Species of *Microlestodes* occur almost everywhere in Australia (including Tasmania), but most species apparently possess rather restricted ranges, whereas one species [*M. macleayi* (Csiki, 1932)] is very widely distributed. At present 13 species are recorded from Australia and one from Papua New Guinea. So far three species are known from the far north of the Northern Territory, namely *M. macleayi* (Csiki, 1932), *M. rufoniger* Baehr, 1987, and *M. inoculatus* Baehr, 1987, but no species has been recorded from Arnhem Land, except Kakadu National Park.

The species of *Microlestodes* are ground-living beetles that are apparently predominantly active at night, because they are commonly attracted to lights. During the daytime, individuals probably hide on the ground under stones, in leaf litter, and in cracks in the soil. Some species are found more commonly near water, others in rather dry savannah and woodland areas, and others even on the floor of tropical to temperate rain forest and in rather dense sclerophyll forest. Apart from the short-winged *M. ovatus* Baehr, 1987, of montane south-eastern Australia, all species are fully winged and in open tropical and subtropical savannah and woodland areas they are sometimes attracted to light in large numbers.

### *Microlestodes arnhemensis* sp. nov.

(Figs 1, 2)

**Material examined.** HOLOTYPE – NTM I.5920, ♂, Northern Territory, Arnhem Land, Djinkar Ridge, south of Maningrida, 12°12.567'S, 134°17.0'E, B. Baehr, 23 September 2009.

**Etymology.** The name refers to the recorded range of this species, which is Arnhem Land in the north of the Northern Territory.

**Diagnosis.** Distinguished from the most similar species *M. macleayi* (Csiki, 1932) by the wider pronotum which is less cordiform and which bears a relatively wider base, and by the more distinctly bisinuate lower surface of the aedeagus, its slightly knobbed apex, and the lack of sclerotised teeth in the orificium. From *M. rufoniger* Baehr, it is distinguished by the generally lighter colour, the less distinct colour pattern of the elytra, and likewise by the shape of the aedeagus; and from *M. inoculatus* Baehr, by the wider pronotum, longer elytra, presence of the common subapical pale spot on the elytra, and less knobbed apex of the aedeagus.

**Description.** Measurements. Length: 3.1 mm; width: 1.25 mm. Ratios: Width/length of pronotum: 1.39; widest diameter/width of base of pronotum: 1.16; length/width of elytra: 1.49.

Colour (Fig. 2). Head piceous, pronotum brown, basal angles of pronotum inconspicuously paler. Elytra brown to piceous, with yellow base and large, common, median, subapical yellow spot that reaches apex; dark colour near suture prolonged laterally; but colour pattern poorly defined and little contrasting. Margins of labrum, mandibles, palpi, and antenna yellow to pale reddish. Legs dirty yellow. Lower surface of head laterally brownish, in middle reddish, rest of lower surface, including epipleurae, dirty yellow.

Head (Fig. 2). Slightly narrower than pronotum. Eys large, moderately protruded laterally, orbits short, oblique and slightly convex. Clypeal suture distinct, labrum transverse, rectangular, 6-setose, mandibles rather short. Mentum edentate. Palpi normal-shaped. Antenna short, pilose from 4th antennomere, surpassing base of pronotum by about 3 antennomeres, 6th and 7th antennomeres approx. 1.4–1.5 x as long as wide. Surface smooth, without any wrinkles, with very fine, very little impressed, about isodiametric microreticulation and with extremely fine, scattered punctures which are visible only under very high magnification, glossy and slightly sericeous.

Pronotum (Fig. 2). Wide, much wider than long, little narrowed towards basal angles, rather depressed, widest slightly behind anterior fourth. Apex wide, concave, apical angles protruded but rounded. Lateral margins evenly but gently convex, very slightly sinuate in front of obtuse basal angles. Base in middle far protruded posteriad, laterally obliquely convex. Apex in middle not margined, lateral margin narrow, marginal channel narrow and very shallow,

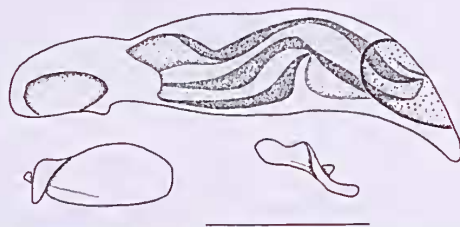


Fig. 1. *Microlestodes arnhemensis* sp. nov. Male aedeagus in lateral view and parameres. Scale bar: 0.25 mm.





Figs 2-5. *Microlestodes* species, habitus (body length in brackets): 2, *Microlestodes arnhemensis* sp. nov. (3.1 mm); 3, *M. macleayi* (Csiki) (3.8 mm); 4, *M. rufoniger* Baehr (3.8 mm); 5, *M. inoculatus* Baehr (3.5 mm).

base inconspicuously margined. Median line shallowly impressed, narrow, neither attaining apex nor base. Anterior and posterior transverse sulci barely indicated, basal grooves shallow. Anterior marginal seta situated at widest diameter, posterior seta at basal angle. Surface with only traces of extremely fine, highly superficial, isodiametric microreticulation and with very difficult to distinguish scattered punctures, moderately glossy and sericeous.

Elytra (Fig. 1). Comparatively elongate, laterally slightly convex, widest slightly behind middle, surface depressed. Humeri widely rounded, apex very gently concave, lateral apical angles rounded, sutural angle shortly rounded. Striae barely impressed, inconspicuous, very finely punctate, intervals absolutely depressed. Third interval with 2 setiferous punctures located slightly in front of middle and at apical third. Punctures very inconspicuous and setae extremely short. Series of marginal setae consisting of 5 basal and 8 apical setae; setae, if still present, elongate. Surface with barely recognisable, finest traces of transverse lines and with very fine, sparse punctures which are perceptible only at very high magnification, surface markedly sericeous.

Lower surface. Metepisternum fairly elongate, slightly less than twice as long as wide at anterior margin. Whole surface with extremely fine and superficial microreticulation, glossy, and with extremely short, erect pilosity, perceptible only at very high magnification. Terminal sternum in male slightly excised medially, bisetose.

Legs. Of average size. Fifth tarsomeres with few setae on lower surface. Tarsal claws with 3 fairly elongate teeth. Three basal tarsomeres of male protarsus slightly widened and biserially squamose.

Male genitalia (Fig. 1). Genital ring narrow, narrowed to apex, slightly asymmetric. Aedeagus rather compact, lower surface evidently bisinuate, apex moderately elongate (in genus), slightly bent down and slightly knob-shaped. Orificium rather short, situated on left upper surface. Internal sac with large, elongate, coiled, finely denticulate plate, but without any sclerotised teeth or spines. Left paramere fairly large, triangular-elongate, right paramere small.

Female genitalia. Unknown.

Variation. Unknown.

**Collecting circumstances.** The holotype was running in leaf litter on the ground together with specimens of two new species of the genus *Scopodes* Erichson, 1842 (Carabidae, Pentagoniini) (for information about the *Scopodes* see Baehr 2010).

**Distribution.** Northern margin of Arnhem Land. Known only from the type locality.

**Relationships.** According to the colour pattern and the shape of the aedeagus *Microlestodes arnhemensis* is most closely related to the widespread *M. macleayi* (Csiki), and to *M. rufoniger* Baehr and *M. inoculatus* Baehr, both occurring only in tropical northern Australia.

### Key to the genus *Microlestodes* (emended)

For identification of the new species, couplet 10 in the key to the genus *Microlestodes* (Baehr 1987: 29) is easily reached, but then it must be changed as follows. Figure captions from the mentioned key are inserted as B87 fig.:

10. Elytra without common, median, preapical spot (Fig. 5); aedeagus with short, but definitely knob-like apex (B87 fig. 32) ..... *M. inoculatus* Baehr
- Elytra with common, median, preapical spot (Figs 2–4); aedeagus either with nearly straight lower surface and without knob-like apex (B87 figs 30, 31), or aedeagus with lower surface remarkably bisinuate and with moderately short, slightly knob-like apex (Fig. 2)..... 11
11. Head, pronotum, and elytra deep black, elytra in apical two thirds black, borders of dark areas well delimited (Fig. 4; B87 fig. 21); aedeagus on lower surface almost straight, with short, obtuse, but not knob-like apex (B87 fig. 31) ..... *M. rufoniger* Baehr
- Head black or brown, pronotum reddish to light brown, elytra in apical two thirds brown to piceous, borders of dark areas poorly delimited (Figs 2, 3; B87 figs 15, 16); aedeagus either on lower surface markedly bisinuate, with moderately short, slightly knob-like apex (Fig. 5), or orificium of aedeagus with two small sclerotized teeth (B87 fig. 30)..... 11a
- 11a. Pronotum wider, ratio width/length 1.39, with wider base, ratio widest diameter/base 1.16 (Fig. 2; aedeagus on lower surface markedly bisinuate, without sclerotized teeth in the orificium (Fig. 2) ..... *M. arnhemensis* sp. nov.
- Pronotum narrower, ratio width/length <1.30, with narrower base, ratio widest diameter/base >1.19 (Fig. 3); aedeagus on lower surface barely bisinuate, with two sclerotized teeth in the orificium (B87 fig. 30)..... 12
12. = as in Baehr (1987).

### REMARKS

According to the general colour pattern and shape of the aedeagus *Microlestodes arnhemensis* is most closely related to the very widespread *M. macleayi* and the northern Australian *M. rufoniger* and *M. inoculatus*. Although the general colouration and the colour pattern of the elytra is quite similar to those of *M. macleayi*, *M. arnhemensis* differs from that species by the wider pronotum and the lack of sclerotised teeth in the orificium of the aedeagus. From both *M. rufoniger* and *M. inoculatus*, it differs by its colour pattern, whereas the differences in shape and structure of the

aedeagus are less obvious. From all three species it further differs by its very small body size which is equalled only by extremely small specimens of the other mentioned species.

These three species and *M. arnhemensis*, together with a few additional, southern species, belong to a group within the genus *Microlestodes*, the species of which are mainly found in more or less open woodland and even in semiarid areas. All the species of this group bear more or less distinctly bicoloured elytra which usually have the basal third pale and the apical two-thirds darker, with or without a common, median, subapical, pale spot. The dorsal surface, or at least the elytra, of all these species is markedly sericeous which may be adaptative to life in rather open, sunny places.

Although the carabid fauna of Kakadu National Park and of the lowlands and floodplains west of this park are reasonably well known due to some sampling efforts during the previous 30–40 years, the fauna of Arnhem Land itself is almost completely unknown. The present paper therefore also should encourage scientists and likewise the land owners to explore this large and in parts rugged area that promises to be home of a peculiar and probably also quite endemic fauna.

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